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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/870,180	05/30/2001	Kenneth L. Smith	54538USA9B011	7800
32692	7590	01/15/2004	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY			GOFF II, JOHN L.	
PO BOX 33427			ART UNIT	
ST. PAUL, MN 55133-3427			PAPER NUMBER	
			1733	
DATE MAILED: 01/15/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/870,180

Applicant(s)

SMITH ET AL.

Examiner

John L. Goff

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 22-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 22-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. This action is in response to Amendment B received on 10/7/03.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
4. Claims 22-30 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chau et al. (U.S. Patent 5,735,988) in view of Stamm (U.S. Patent 3,712,706) and Rowland (U.S. Patent 3,810,804).

Chau et al. are directed to a method for making optical elements that are reflective. Chau et al. teach a method comprising providing a body layer (replica surface topography) having a structured surface, applying a reflective coating to the structured surface, applying an at least partially transparent, flowable, and radiation curable adhesive to the structured surface, placing a substrate over the radiation curable adhesive, and curing the adhesive to form an optical element.

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Chau et al. further teach applying the radiation curable adhesive by first coating the substrate and then, applying the coated substrate to the structured surface (Figures 1C-1F and Column 5, lines 57-65 and Column 6, lines 6-16 and 20-21).

Regarding claims 22 and 35, Chau et al. are silent as to the structured surface including cube corner cavities. However, it is noted Chau et al. teach it is well within the ordinary skill of one in the art to choose any type of suitable surface topography, i.e. Chau et al. are not limited to any particular surface topography (Column 5, lines 16-21). One of ordinary skill in the art at the time the invention was made would have readily appreciated using as the surface topography taught by Chau et al. a topography comprising cube corner cavities as suggested by Stamm to create a reflective optical element having high reflective efficiency.

Stamm is directed to retroreflective articles having high reflective efficiency. Stamm teaches providing a base material, providing the base material with cube corner cavities, applying a reflective foil to the cube corner cavities, and filling the cube corner cavities with an optically transparent material. Stamm teaches the cube corner cavities are separated on their top surface (Figure 1 and Column 2, lines 3-13 and Column 3, lines 35-55 and Column 5, lines 8-14 and Column 6, lines 38-45).

Regarding claim 22, Chau et al. do not specifically recite the radiation curable adhesive as also pressure-sensitive, and it is unclear whether or not the acrylic based radiation curable adhesives suggested by Chau et al. are intrinsically pressure-sensitive. However, one of ordinary skill in the art would have readily appreciated that acrylic based radiation curable adhesive such as those taught by Chau et al. include acrylic based pressure-sensitive adhesive particularly when

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the optical elements are laminated to a substrate as evidenced by Rowland wherein an acrylic based pressure-sensitive adhesive is used to laminate a substrate to a retroreflective article.

Rowland is directed to a method of making retroreflective articles. Rowland teaches a method comprising providing a body portion having a structured surface, applying a reflective coating to the structured surface, applying a flowable, acrylic pressure-sensitive adhesive to the structured surface, and laminating a releasable sheet to the structured surface. Rowland further teaches removing the releasable sheet to mount the reflective material on another surface (Figure 3 and Column 4, lines 42-50 and Column 7, lines 63-70 and 74-75 and Column 8, lines 1-2).

Regarding claims 26 and 27, Chau et al. are silent as to applying the reflective optical element to a substrate wherein the substrate is a releasable liner. However, it is noted Chau et al. are not limited to any particular type of substrate. One of ordinary skill in the art at the time the invention was made would have readily appreciated using as the substrate taught by Chau et al. a releasable liner as suggested by Rowland as it is conventional in the art to apply the optical element to a releasable liner when the optical element is not permanently mounted during production of the element.

Regarding claims 28 and 29, Chau et al. are silent as to incompletely filling the cube corner cavities. One of ordinary skill in the art at the time the invention was made would have readily appreciated that when applying the adhesive to the structured surface some air would be trapped and the cavities would be incompletely filled resulting in a later settling of the adhesive.

Regarding claim 30, Chau et al. are silent as to the degree the radiation curable pressure-sensitive adhesive is cured/crosslinked prior to its application to the structured surface. Absent

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any unexpected results, one of ordinary skill in the art at the time the invention was made would have readily appreciated that an adhesive crosslinked to a higher degree prior to its application would reduce the processing/cure time required after its application and thus, improve production efficiency.

5. Claims 31, 33, 34, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chau et al. (U.S. Patent 5,735,988) in view of Stamm (U.S. Patent 3,712,706).

Chau et al. are directed to a method for making optical elements that are reflective. Chau et al. teach a method comprising providing a body layer (replica surface topography) having a structured surface, applying a reflective coating to the structured surface, applying an at least partially transparent, flowable, and radiation curable adhesive to the structured surface, placing a substrate over the radiation curable adhesive, and curing the adhesive to form an optical element. Chau et al. further teach applying the radiation curable adhesive by first coating the substrate and then, applying the coated substrate to the structured surface (Figures 1C-1F and Column 5, lines 57-65 and Column 6, lines 6-16 and 20-21).

Regarding claims 22 and 35, Chau et al. are silent as to the structured surface including cube corner cavities. However, it is noted Chau et al. teach it is well within the ordinary skill of one in the art to choose any type of suitable surface topography, i.e. Chau et al. are not limited to any particular surface topography (Column 5, lines 16-21). One of ordinary skill in the art at the time the invention was made would have readily appreciated using as the surface topography taught by Chau et al. a topography comprising cube corner cavities as suggested by Stamm to create a reflective optical element having high reflective efficiency.

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Stamm is directed to retroreflective articles having high reflective efficiency. Stamm teaches providing a base material, providing the base material with cube corner cavities, applying a reflective foil to the cube corner cavities, and filling the cube corner cavities with an optically transparent material. Stamm teaches the cube corner cavities are separated on their top surface (Figure 1 and Column 2, lines 3-13 and Column 3, lines 35-55 and Column 5, lines 8-14 and Column 6, lines 38-45).

6. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chau et al. and Stamm as applied above in paragraph 5, and further in view of Rowland.

Chau et al. and Stamm as applied above teach all of the limitations in claim 32 except for specifically reciting the radiation curable adhesive as also pressure-sensitive, and it is unclear whether or not the acrylic based radiation curable adhesives suggested by Chau et al. are intrinsically pressure-sensitive. However, one of ordinary skill in the art would have readily appreciated that acrylic based radiation curable adhesive such as those taught by Chau et al. as modified by Stamm would include acrylic based pressure-sensitive adhesive particularly when the optical elements are laminated to a substrate as evidenced by Rowland wherein an acrylic based pressure-sensitive adhesive is used to laminate a substrate to a retroreflective article.

Rowland is directed to a method of making retroreflective articles. Rowland teaches a method comprising providing a body portion having a structured surface, applying a reflective coating to the structured surface, applying a flowable, acrylic pressure-sensitive adhesive to the structured surface, and laminating a releasable sheet to the structured surface. Rowland further teaches removing the releasable sheet to mount the reflective material on another surface

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(Figure 3 and Column 4, lines 42-50 and Column 7, lines 63-70 and 74-75 and Column 8, lines 1-2).

Response to Arguments

7. Applicant's arguments filed 10/7/03 have been fully considered but they are not persuasive. It is noted applicant's invention as described in the "Brief Summary" is the use of radiation curable adhesives in retroreflective articles, and Chau discloses the same. Regarding applicant's arguments:

Applicant argues "The combination of Stamm with Chau is not appropriate. Chau relies on a surface having continuous linear peaks to provide the underlying topography required to achieve his desired results, i.e. total reflectance of light." It is noted Chau discloses "It should be noted that the surface topography is represented in FIG. 1A as a periodic series of isosceles triangular prisms for improved clarity. Although the preferred embodiment shown in FIG. 1A includes the periodic series or isosceles triangular prisms, it is well within the level of ordinary skill in the art after having knowledge of the invention disclosed herein to substitute any other type of surface topography." (Emphasis Added) Thus, Chau requires one of ordinary skill in the art to choose a surface topography having high reflective efficiency. Stamm discloses a surface topography (cube-corner cavities) having high reflective efficiency such that the combination of Stamm with Chau is appropriate.

Applicant further argues "Finally, the Examiner has stated that Chau teaches a method in which a radiation curable adhesive is applied to the structured surface. He never uses the word "adhesive" and he never describes the fluid as an "adhesive". It is noted Chau discloses

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“Referring now to FIG. 1E, the next step in the sequence of procedures is to deposit an index matching fluid 50 on top of coating 40. Index matching fluid 50 can be any material that is at least partially transmissive. For example, index matching fluid 50 can be an acrylic based epoxy for the purpose of providing clarity. Index matching fluid 50 can be a mixture of two or more components. It is preferred that the index matching fluid 50 be a UV curable fluid. Referring now to FIG. 1F, the next step in the sequence of procedures is to contact index matching fluid 50 with substrate 60”. Thus, Chau teaches that the index matching fluid is used to bond substrate 60 with the coating 40, the index matching fluid may be acrylic based epoxy, and the index matching fluid is preferably UV curable. One of ordinary skill in the art would readily appreciate that an “index matching fluid” having these characteristics is an adhesive.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John L. Goff** whose telephone number is **703-305-7481** (after December 18, 2003 the telephone number will be 571-272-1216). The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



John L. Goff



JEFF H. AFTERGUT
PRIMARY EXAMINER
GROUP 1300